

## **1. Review of Letter of Intent titled UV FEL Characterization, submitted by Williams**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Yes this goes a long way toward establishing a basis under which BES could fund the FEL through user interest. However you need to clarify when the work supported by the LDRD funding stops and when the first experiment using the results of the LDRD effort begin.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

This could be funded with VA funds if such funds were available.

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

I think it is fine as it stands. Including a concrete plan for moving forward after success of this stage would strengthen the narrative.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

Yes

6. Are any of the budget items questionable (or missing)?

Yes – funding for FEL operations must be included in a manner consistent with how others are charged for its use.

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

This has a reasonable shot of attracting at least one of the potential BES funded projects to the FEL with operating money.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

Yes

## 2. Review of Letter of Intent titled Beam Dynamics, submitted by Tennant

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Yes this does align with Lab goals; notably strengthening our collaboration with LBNL for NGLS. However, the prospects that this will help define long-term directions for the lab and result in future additional funding are modest at best. Absent a serious re-thinking of these issues, we would discourage the effort necessary to write a full proposal.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

Could in principle be funded by VA but present funds are insufficient

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

Perhaps discussion of tie in to NGLS plans

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

Yes

6. Are any of the budget items questionable (or missing)?

Looks like cost estimates are low for proposed effort. assuming full burden: year 1 is closer to \$125k ; year 2 is closer to \$ 285k; and year3 is closer to \$295k

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

Some possibility of increased funding from LBNL. However the connection and likelihood needs to be clarified and strengthened.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

Yes

### **3. Review of Letter of Intent LOI 3 titled Development of Cherenkov Particle Identification Detectors using MCP-PMTs, submitted by Y. Qiang, C. Zorn et al.**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: Cardman@jlab.org).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Yes.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

Yes, in principle. The project seeks to study if a novel large-area fast response photo-detector using micro-channel plates would be feasible as readout of nuclear physics particle-identification detectors, particularly Ring Imaging Cherenkov Detectors. This would be relevant for all Halls at 12 GeV, and EIC, and various other nuclear and high-energy physics applications. The project seems innovative and is not directly main stream within the Halls, but builds on JLab expertise and adds in a few world experts.

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

We would encourage strengthening the positioning of this work as long-term R&D that will develop capabilities for known, desirable future programs, and recommend that you avoid any appearance that it is simply fixing the “descoped” Cerenkov detector for GlueX.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

The proposed study presumably can. The timeline will also be driven by needs for GlueX/Hall D.

6. Are any of the budget items questionable (or missing)?

The budget looks reasonably complete, although likely small amounts of service time from experts within the lab (radiation detector and imaging group, fast electronics group) are required to assist the study and tests.

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

No, but beyond follow-on funding there could be large impacts for scientific experiments worldwide.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

Yes, given the obvious need within Hall D for such a device this investment is wise.

#### **4. Review of Letter of Intent titled “Investigation of carbon nanotubes for bakable XHV cryopump sorber material”, submitted Marcy Stutzman**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab’s Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it’s no good”, but we could/should be sure they clearly connect their project to the lab’s strategic goals, and if that isn’t clear in the LOI we should insist that they fix that omission in the proposal.

The proposal should better explain the relevance of photocathode lifetime on present CEBAF operations (spot moves from 10 to 100 days: how long for a spot size change?) and EIC design. Proposal very well aligned to the strategic plan enabling technologies (e- and e+ sources, cryogenics)

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn’t it?

Yes, it needs an explanation of why it isn’t

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

The proposal should emphasize and explain more the potential of this technology for commercialization.

5. Can the project’s aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

2 years reasonable, budget see below (6)

6. Are any of the budget items questionable (or missing)?

The labor needs to be more specific: \$80k burdened looks very low. What is the skill mix of the 2 staff (1/2 time) requested?

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

A patent seems very likely if successful

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

The staff request needs to be specified (6) but in general yes



## **5. Review of Letter of Intent LOI 5 titled ULTRA-HIGH RESOLUTION AWAKE ANIMAL PET INSTRUMENTATION FOR PRECLINICAL IMAGING, submitted by W. Xi, S. J. Lee et al.**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Yes.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

No, although possibly through VA funds.

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

What is proposed is a feasibility test of the proposed EOCD which seems to fit as is within the LDRD framework as it would also be applicable to biomedical imaging. It directly uses strengths within the lab, in both the Radiation Detector and Imaging group and the FEL group.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

Yes, given that only a feasibility test is proposed.

6. Are any of the budget items questionable (or missing)?

The budget seems clear enough, but what is less clear to me whether the proposed product will be final or an intermediate step. There have been funds assigned to awake-animal imaging for a while. The proposal suggests a completed PET detector/motion tracking system, which would be great progress towards wide applications, but would this constitute the final step?

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

Yes, especially if the answer to the previous question is affirmative – this proposed product would constitute a final step in a detector/motion tracking system for imaging. If so, there could be large follow-on.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

Yes.

## **6. Review of Letter of Intent LOI 6 titled A High Signal Fidelity Electro-Optically Coupled Detector for Nuclear Physics, submitted by W. Xi et al.**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Yes. This is long-range R&D with multiple potential applications, both for the nuclear physics program and for our medical imaging effort.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

Yes. The proposal is for a feasibility study of a general-purpose electro-optical coupled readout detector that could function in both high radiation and high magnetic field, and as such has relevance for Nuclear Physics. It hasn't been funded to date simply because it has a lower priority versus direct needs related to the 12 GeV upgrade and science program as there is no experiment directly needing this technology currently under construction.

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

What is proposed is a feasibility test of the proposed EOCD which seems to fit as is within the LDRD framework as it would also be applicable to biomedical imaging. It directly uses strengths within the lab, in both the Radiation Detector and Imaging group and the FEL group.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

Yes, given that only a feasibility test is proposed.

6. Are any of the budget items questionable (or missing)?

No.

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

Yes, but presumably that takes another step after the feasibility test. A patent and tech transfer could follow directly following this feasibility test though. In the end, there can be applications in the biomedical industry.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

Yes.

## **7. Review of Letter of Intent LOI 7 titled Wireless, Hand-Held Data Acquisition System for Imaging Detector, submitted by J. McKisson et al.**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)?

Yes, this would strengthen the medical imaging efforts. However, it would be useful if it was clear that there was a "customer-driven" demand for such a system.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

No. DOE contract funds are not possible, VA funds may be possible.

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

Yes, there could be clearer statements made that this is a customer-driven need from the medical world or the Dilon collaboration.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going "over budget")

Yes, this is a logical and relatively modest project and well doable.

6. Are any of the budget items questionable (or missing)?

No, the budget request is straightforward.

7. Is there a reasonable probability that "follow-on" funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

Yes, in the form of likely patent and tech transfer.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

Yes.



## **8. Review of Letter of Intent titled High efficiency magnetron RF source for SRF accelerators, submitted by Haipeng Wang**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

The proposal is relevant to the Lab sustainability goals

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

Collaboration with industry through an SBIR is explicitly needed in Year 2 and 3. This violates the terms of the order. It is acceptable for us to subcontract with a magnetron manufacturer, funded by the LDRD, but not to supplement LDRD funding with SBIR funding.

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

Yes, but....

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

No

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

The feasibility of completing all of this work without a “running start” and additional funding is problematic. It may be appropriate to instead make this a proposal to develop the concepts and specifications etc. in preparation for soliciting the manufacture and testing of a magnetron.

6. Are any of the budget items questionable (or missing)?

More details is needed on the budget. It cannot rely on SBIR funding to supplement LDRD funding.

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

Yes, the potential for a patent and new work for other projects is high

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

The requirements for JLAB staff need to be specified



## **9. Review of Letter of Intent LOI 9 titled A Chameleon Search Experiment, submitted by J. Boyce et al.**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Not directly, only indirectly. This scientific proposal is correlated with science of interest at JLab under the topic of Fundamental Symmetries, but there is no direct link with the lab's strategic goals. It is of interest as it links with searches for evidence beyond the Standard Model, to search for a hypothesized chameleon particle that could be correlated with dark energy and would use potential strengths of JLab's FEL. We would discourage further work on this in the LDRD funding framework.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

Yes. This should not be an LDRD proposal – it should instead go to the Jefferson Lab PAC (in a manner similar to “Dark Light”) and, if approved, we can begin a search for appropriate funding.

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

Yes. In principle it could be funded through the nuclear physics program, but that would happen ONLY with scientific review and approval and following complex discussions with DOE about funding of nuclear physics experiments using the FEL facility

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

What is proposed is a scientific experiment, without a clear indication where funds to operate the FEL facility would come from. As a scientific experiment, an alternate route would be to propose at the regular JLab Program Advisory Committee, similar as the FEL/DarkLight experiment.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

Not clear. There are no operational funds in the proposed budget to take care of FEL costs. It is also not clear to what extent it would fit within the FEL planning/timeline.

6. Are any of the budget items questionable (or missing)?

Yes, operations costs to run the experiment at the FEL are not included. The budget proposed is only for some costs that seem related to staff time and conference travel, and some equipment costs to modify the LIPSS setup for this experiment.

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

No, this is a scientific experiment.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

This would need further discussion, as the proposal only includes minimal time for a senior scientist related to oversight. The proposed experiment would require substantial amount of time of much JLab staff for FEL operations.

## **10. Review of Letter of Intent titled A P-o-P experiment for a magnetized photocathode SRF e- gun, submitted by Rongli Geng and Yuhong Zhang**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Proposal well aligned with Lab strategic goals: MEIC (e- cooling), and enabling technologies (e- and e+ sources and SRF)

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

Yes in principle but we do not have a budget for MEIC SRF R&D in place

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

The need for a magnetized e- beam could be better articulated in the introduction

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

Timeline and budget seem feasible given the existence of basic equipment (cavity)

6. Are any of the budget items questionable (or missing)?

The labor requirements need clarification beyond “members of SRF will be involved). Specify and breakdown the 0.5 FTE

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

Very likely, it is a novel idea and a patent has been filed already. PoP would generate further R&D and tech transfer.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

TBD, see point 6.

## **11. Review of Letter of Intent titled A PoP Experiment for the design concept of an ERL circulator cooler, submitted by Yuhong Zhang**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Well aligned, proposal important to prove enabling technology for MEIC (e- cooler)

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

FEL Operating costs must be included in the funding plan using “standard and usual practice” for funding of such operations.

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

Yes, but the MEIC R&D not yet an established budget line item.

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

Spell check

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

2 elements of concern here: the use of legacy equipment (SLAC stripline kickers), possibly requiring more time and money than anticipated, and the necessary R&D in year 1 and 2. Both need thorough thinking and a credible plan. Given both the budget and timeline pressures, it might well be more appropriate to reframe this proposal in terms of just demonstrating the kicker capability.

6. Are any of the budget items questionable (or missing)?

Missing: budget to refurbish the SLAC kickers, FEL operation funds could not fit in the budget profile.

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

It is likely that a successful demonstration would attract additional R&D funds, however the proposal should articulate better the potential for EIC and other projects worldwide

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

See comments in 6. In addition, the proposal needs to discuss the impact on the FEL plans and runs, and demonstrate that this project is compatible with the FEL program during and after the experiment.

## **12. Review of Letter of Intent titled Pre-conceptual design of a CW positron source for JLAB, submitted by Pavel Degtiarenko and Joe Grames**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

The development of a polarized e<sup>+</sup> source would open an entirely new area of research for JLAB so it is very attractive. Well aligned to the strategic plan, enabling technologies (e<sup>-</sup> and e<sup>+</sup> sources)

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

The funding of this proposal would allow to hire a Post Doc. Would be difficult to do so on other funds

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

The LOI is well articulated. Maybe a discussion of the possible impact of having an operational e<sup>+</sup> source on other labs and projects would be desirable.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

Timeline and budget seems feasible

6. Are any of the budget items questionable (or missing)?

No

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

The pre-conceptual design, if successful, should open R&D funding for positron sources and possibly a construction project

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

The JLAB staff needs, essentially supervisory, are well articulated



### **13. Review of Letter of Intent LOI 13 titled High Rate, High resolution, Radiation Hard Calorimeter, submitted by S. Stepanyan et al.**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Yes, although the potential quantitative gain from the proposed radiation hard calorimeter is not given. Which science endeavors would quantitatively benefit? At very least the LOI must point to near-term, important science that cannot be done without these calorimeters to justify funding it via LDRD.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

Yes, in principle. This seems a general R&D topic that could be of interest to multiple groups within Physics, although no quantitative scientific arguments are given.

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

More quantification should be given for experiments at 12 GeV, potentially at an EIC (would it save costs, would it be relevant?), and elsewhere. As written it seems, even of interest to study radiation-hard new calorimeter materials and possible integration in triggering and readout, more a personal project than a project of universal interest.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

Probably, given the experience gained at JLab within the Fast Electronics Group.

6. Are any of the budget items questionable (or missing)?

The budget looks small, and only includes costs to acquire test materials and funds for an electrical engineer to work on pipelined electronics board design. Quite possibly, more extensive studies are needed requiring personnel.

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

No, but beyond follow-on funding there potentially could be impacts for scientific experiments worldwide.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

This is not clear, given the ongoing work load with CLAS12 and with fast pipelined electronics coming in for all Halls. It may be possible to do the electronics triggering and readout development.

## 14. Review of Letter of Intent titled THz Beamline, submitted by Klopff

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: Cardman@jlab.org).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Yes this may generate significant publication in THz regime and will provide significantly enhanced capability regardless of research outcome in first test.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

Could in principle be funded by VA if funds were available

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

No improvements suggested

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

Yes, though tightWe recommend a thorough review of the budget and cost justification by the PI to ensure that all relevant items have been included with some modest contingency.

6. Are any of the budget items questionable (or missing)?

There needs to be clear funding for FEL operations, funding at the appropriate “standard” rates charged to all users. Funding for any experiments with the new beamline should not be included in any proposal as this would violate guidelines.

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

This will help position a proposal to a govt agency for funding but will not guarantee it. Funding for THz has been difficult although there is a DARPA call out now.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

Yes

## **15. Review of Letter of Intent titled Alkali-Antimonide photocathode deposition system, submitted by Matt Poelker**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

This capability is relevant to MEIC (source for e- cooler), FEL (new high current source) and to the enabling technologies strategic goal (sources)

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

The labor needs must be identified and specified

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

In principle yes but tight budgets. An explanation of why it cannot use program funds and, more importantly, what are the advantages of having the capability here independent of BNL (our current source).

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

The need for a deposition system located at JLAB could be better identified by describing in more details the disadvantages of relying on third parties for the deposition process

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

The timeline of 2 years is reasonable. The budget needs work.

6. Are any of the budget items questionable (or missing)?

JLAB staff requirements need to be identified, and Equipment, Services and Subcontracts need to be worked out and presented in more detail

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

Having this capability at JLAB will open possibility of collaboration with other laboratories doing R&D on sources and possibly companies

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

JLAB staff requirements need to be articulated

## **16. Review of Letter of Intent titled Niobium metallurgy investigations for reliable and efficient production of high performance SRF cavities, submitted by Ganapati Myneni**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

The proposal aligns with the strategic goal of enhancing the JLAB SRF core competencies but the proposal should spell better why this specific study should be done other than “make better cavities”.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

As presented, with no labor costs, it does violate the term of the DOE order. These costs must be added at the standard JLab rates, including the costs for sample preparation.

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

It should probably but it is extraordinarily difficult to get money into JLAB from outside sources to fund this kind of SRF R&D

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

See comment to question 1.could benefit from a better introduction and statement of goals

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

Labor budget addressed in 6.

6. Are any of the budget items questionable (or missing)?

The proposal must have labor to be viable.

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

Possible

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

The staffing requirements have not been articulated



## **17. Review of Letter of Intent titled M&D for High Flux X-ray, submitted by Zhang and Benson**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Yes this generally increases the capability of the FEL facility and provides a source capability far beyond anything else that exists in this wavelength range.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

This could be done on VA funds if sufficient funding were available

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

It would help to have a more concrete idea on what the follow-on plan for this to get funding or research support. What agency? What research call? Or is there some other plan? Would it be possible to increase the effort (within LDRD guidelines and achieve a demonstration?) The overall customer for such Compton sources has not been clear for efforts at any of the DOE programs.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

I suggest that a demonstration of the achieved flux at at least one wavelength might be necessary to convince a funding agency or user. The project can do the stated goals within budget but I don't know that a design and analysis will be sufficient to find a way to carry it forward.

6. Are any of the budget items questionable (or missing)?

No

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

I have doubts that just a design and analysis will be sufficient to establish a reasonable funding probability for a follow-on.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

Yes

## **R1. Review of Letter of Intent R1 titled DEVELOPMENT OF A PROCEDURE FOR MODEL INDEPENDENT FLAVOR DECOMPOSITION OF PARTONIC TRANSVERSE MOMENTUM DISTRIBUTIONS, submitted by H. Avagyan et al.**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Yes, but only in most general terms. The proposed project does align with an important science topic related to both the 12-GeV Upgrade and the EIC, and would strengthen the multi-Hall and EIC efforts related to TMDs, but does not further add to establishing the lab's strategic goals. The case for why this should be an LDRD project vs. simply a coherent effort among the halls needs to be made. Also the case for why starting it now, vs in a year or two, must be made.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

Yes, it could. The main reason it appears to be submitted is to strengthen efforts amongst the Halls and the outside user community, to force more cooperation and a better venue for data interpretation of this highly-rated novel science topic.

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

Not directly, the project will always be to some extent mainstream. On the other hand, there are precedents from other labs where LDRD was used for the generation of multi-purpose general Monte Carlo simulation packages related to science that deserves more insight through simulations.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

Yes, this should be doable in the indicated time frame.

6. Are any of the budget items questionable (or missing)?

No

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

Not directly, only indirectly as it could strengthen a science topic related to the MEIC

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

Yes

## **R2. Review of Letter of Intent R2 titled A CRYOGENIC RECOIL DETECTOR FOR DVCS, submitted by A. Camsonne et al.**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Yes, but only in most general terms. The proposed project does align with an important science topic related to the 12-GeV Upgrade, and could open a new avenue for detailed investigation, but does not further add to establishing the lab's strategic goals. It probably would be more appropriate as a project motivated by a science proposal to the 12 GeV PAC, followed by the development of this detector (funded using the usual sources) if the PAC accepts the proposal and gives it a high scientific rating.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

Yes, it could. Probably submitted to LDRD as it remains as of yet a speculative R&D project, which ultimately could be useful for projects beyond the direct science of interest proposed here.

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

Yes, if arguments could be made for a more inclusive use of the proposed recoil detector technique, or more general active detection techniques in low-temperature and high-field applications.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

Not really, the budget seems only sufficient for a design study and initial fiber and bonding testing.

6. Are any of the budget items questionable (or missing)?

In the end probably more budget is needed, what is proposed seems only a very initial step.

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

No, but there may be large scientific spin-off.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

Yes

### **R3: Review of Letter of Intent titled R3: Advanced Software and Computing for Experimental Physics submitted by David Lawrence, Mac Mestayer, Simon Taylor, Veronique Ziegler**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)?

Yes, the LOI ties well to the goals for 12 GeV experimental program. However, a case needs to be made as to why this should be done on LDRD funding outside of normal, OPS-funded efforts.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No.

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

Yes. Some users may be already experimenting with GPUs. A full proposal would need to indicate how having LDRD would significantly advance the work. The proposal is beyond the scope of the 12 GeV project but within the scope of 12 GeV operations.

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

As regular CPUs are relatively inexpensive so the proposal would need to address how the additional labor expense would result in sufficient GPU based performance enhancements to justify the labor costs. Amdahl's Law considerations should also be addressed.

5. Can the project's aims be completed within the timeline and budget limits?

Likely yes. There will be more to learn but this would be a good proof of principle.

6. Are any of the budget items questionable (or missing)?

The GPU hardware is mostly available from the Scientific Computing group at JLab at no new cost.

7. Is there a reasonable probability that "follow-on" funding will result from the project in the LOI?

If successful, 12 GeV operations would likely continue some appropriate level of funding. As indicated in 4 above, this cost should be compared to just procuring additional CPUs.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

The proposal is mostly a new dedicated staff. The matrixed staff time is available.



**R4. Review of Letter of Intent R4 titled TEST OF FUSION FUEL POLARIZATION SURVIVAL IN A TOKAMAK PLASMA, submitted by A. Sandorfi et al.**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: Cardman@jlab.org).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

Not directly, it aligns indirectly through a potential for enabling technologies to extend the scientific reach of the lab, but it's a bit of a stretch as the promised growth is not in JLab mission-related areas but rather using existing JLab technology and expertise to grow collaborations and patents for alternate DOE initiatives. This project would benefit from a clear discussion of strategy and long-term plans with lab management prior to submission as an LDRD project.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

No

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

No

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

No, this proposal fits very well within an LDRD framework with the one caveat that it is not directly aligned with the lab's strategic mission goals.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

The budget proposed is only for an initial engineering study and adaptation, and hence compatible with the timeline. For the overall budget request see under the next question.

6. Are any of the budget items questionable (or missing)?

The budget proposed is only for an initial engineering study and adaptation. Still, given the complexity of the apparatus and problem, it is not clear that all infrastructure requirements are included in the proposed budget. This should be clarified.

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

Yes, this could potentially result in a new work for others project, although it is unclear how this can be accommodated within the existing work structure and scope of the HDIce group.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

This would need further discussion. An overall lab goal is to show compatibility of the HDIce target with electron beam, which would open up large science opportunities at the 12 GeV Upgrade for transversely polarized targets. This will require quite some work and dedication of the existing HDIce group. As is now, it is hard to see how the group can expand on this technically difficult R&D program. Follow-up discussions are already planned. However, the proposal involves a first-stage engineering work to study adaptation of existing facilities with other pellet magazines which would require new manpower within the budget.

## **R5: Review of Letter of Intent titled *Forward Processes with Light Ions at EIC*, submitted by Christian WEISS**

Comments on your letter of intent are in the form of answers to the set of questions that are planned as the evaluation criteria for the final LDRD Proposals. If you have questions about these comments, please contact your Division Associate Director or Larry Cardman (the LDRD Program Manager: [Cardman@jlab.org](mailto:Cardman@jlab.org)).

1. Does the project align well with the lab's Strategic Goals (and/or can that alignment be improved)? Note: I regard this as supportive advice to the writer of an LOI – we should not tell them “no, it's no good”, but we could/should be sure they clearly connect their project to the lab's strategic goals, and if that isn't clear in the LOI we should insist that they fix that omission in the proposal.

This project plans to study an important component of physics that can be studied with an EIC. It therefore contributes to the future strategy of the Lab.

2. Is there any aspect of the project in the LOI that would violate the terms of the DOE Order?

There is the question of the collaborative effort from JLab and University staff to support this project. These do not appear in the budget as presented, and must be added.

3. Could the project be funded using available (DOE contract, VA, etc.) funds; if yes, why isn't it?

In principle, a Theory postdoc could indeed work on this project, but with the present budget pressures and the need to support the 12 GeV program, there are not the resources available for specific EIC projects on multi-parton correlations in collisions with light ions.

4. Are there ways that the project proposed in the LOI could be improved – either scope and goals, or ways in which it would more clearly fit within the LDRD framework?

This is already an ambitious project for 2 years and will require input from all the named people to achieve its goals. Funding for that effort must be included in the proposal.

5. Can the project's aims be completed within the timeline and budget limits? (Note that 3.000 years is the absolute maximum, though we are allowed to start the clock from the date the project begins spending money rather than the date on which it is approved. Note also that there are no provisions for a project going “over budget”)

The budget as presented is incomplete. As noted there will be the need for considerable guidance, mentoring, and collaboration from the scientists involved if this project is to be successful in a two year timescale. Only the postdoc salary and travel are presently costed.

6. Are any of the budget items questionable (or missing)?

See 2 and 5 above

7. Is there a reasonable probability that “follow-on” funding will result from the project in the LOI? (e.g. incremental DOE/NP funding, a patent and tech transfer, a new work for others project, etc.?)

This addresses a key physics component of a future EIC, in particular benchmarking neutron interactions so essential for flavor separation. Follow on funding would be physics R&D for this, and eventually for an EIC itself.

8. A typical project will involve a consequent amount of time from JLab staff. Is the home division of the staff involved prepared to do without the time of the individuals involved?

This has to be addressed in any full proposal, when the time the senior staff will actually commit to the project has to be costed.